CLAIMS

What is claimed is:

1. A method of forming a layer over a substrate, comprising:

depositing a layer of a first reactive species over the substrate;

chemically reacting the layer of the first reactive species with a second reactive species to create a first product; and

preferentially desorbing an unreacted reactive species leaving a layer of the first product.

2. The method, as recited in claim 1, wherein the depositing of a layer deposits a monolayer.

3. The method, as recited in claim 2, wherein the depositing of a layer is by simple vapor deposition.

4. The method, as recited in claim 3, wherein the simple vapor deposition is preformed by vaporizing a solid or liquid by heating.

5. The method, as recited in claim 4, wherein the unreacted reactive species that is desorbed is the first reactive species.

6. The method, as recited in claim 5, wherein the step of desorbing the unreacted first reactive species, comprises heating the layer.

7. The method, as recited in claim 6, further comprising:

cooling the layer after preferentially desorbing the unreacted first reactive species;

depositing a second layer of the first reactive species;

chemically reacting the layer of the first reactive species with the second reactive species to create the first product; and

preferentially desorbing unreacted first reactive species leaving a second layer of the first product.

8. The method, as recited in claim 1, wherein the depositing of a layer is by simple vapor deposition.

9. The method, as recited in claim 8, wherein the unreacted reactive species that is desorbed is the first reactive species.

10. The method, as recited in claim 1, wherein the unreacted reactive species that is desorbed is the first reactive species.

11. The method, as recited in claim 1, wherein the step of desorbing the unreacted reactive species comprises heating the layer.

12. The method, as recited in claim 1, further comprising:

cooling the layer after preferentially desorbing the unreacted first reactive species;

depositing a second layer of the first reactive species;

chemically reacting the layer of the first reactive species with the second reactive species to create the first product; and

preferentially desorbing unreacted reactive species leaving a second layer of the first product.

13. A thin film of a plurality of layers over a substrate, wherein each layer is individually formed by the method, comprising:

depositing a layer of a first reactive species over the substrate;

chemically reacting the layer of the first reactive species with a second reactive species to create a first product; and

preferentially desorbing an unreacted reactive species leaving a layer of the first product.

14. The thin film, as recited in claim 13, wherein the depositing of a layer deposits a monolayer.

15. The thin film, as recited in claim 14, wherein the depositing of a layer is by simple vapor deposition.

16. The thin film, as recited in claim 15, wherein the simple vapor deposition is preformed by vaporizing a solid or liquid by heating.

17. The thin film, as recited in claim 16, wherein the unreacted reactive species that is desorbed is the first reactive species.